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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/619,171

07/10/2003

Moshe Sarfaty

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01/27/2005

Patent Counsel  
Applied Materials, Inc.  
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EXAMINER

SMITH, ZANDRA V

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/619,171	Applicant(s) SARFATY ET AL.	
	Examiner Zandra V. Smith	Art Unit 2877	(8w)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 25-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25-40 and 44 is/are rejected.
- 7) ☒ Claim(s) 41-43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/10/03</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Information Disclosure Statement*

The Information Disclosure Statement filed 10 September 2003 has been entered and the references considered by the examiner.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25, 31-39 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sakiyama et al. (5,140,265)* in view of *Ermakov et al. (US 6,448,795 B1)*.

As to **claims 25 and 44**, Sakiyama discloses an eddy current flaw detecting endoscope, comprising:

A sensor (6) having an eddy current inspection coil (2), and eddy current detector (13), first and second optical fibers (44) connected to a light source (8) and detector (CCU, 9) (col. 5, line 65- col. 6, line 20) and since the endoscope may be used in a boiler, turbine, machine, chemical plant, or pipeline, a housing is provided (col. 1, lines 18-25). Sakiyama differs from the claimed invention in that a radio frequency generator is not provided; however to do so is well known as taught by Ermakov. Ermakov discloses a three coil apparatus for inductive measurements of conductance that includes a RF generator (31 or 33) to produce eddy currents (col. 5, lines 1-5). It would have been obvious to one having ordinary skill in the art at the time

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of invention to include a radio frequency generator to generate eddy currents and to increase precision of detection.

As to **claims 31-32**, the system of Sakiyama and Ermakov discloses everything claimed, as applied above, in addition a modifying member, attached to first and second fibers, for focusing light from the source to the detector is provided (col. 6, lines 48-60, lens system 36).

As to **claims 33-34**, the system of Sakiyama and Ermakov discloses everything claimed, as applied above, in addition the first and second optical fibers are disposed parallel to and coaxially to the eddy current inspection coil in the sensor (see fig. 7).

As to **claims 35-39**, the system of Sakiyama and Ermakov discloses everything claimed, as applied above, in addition a light source (8) and detector (9) are provided. Sakiyama and Ermakov differ in that the light source is not disclosed as being a laser producing light in the claimed wavelength ranges, however since the use of a laser would amount to a substitution of art recognized equivalents, it would have been obvious to one having ordinary skill in the art at the time of invention to include a laser. It would have been obvious to one having ordinary skill in the art at the time of invention to provided the particular wavelength ranges to allow for detection of multiple components of the sample under test. As to the CCD, Sakiyama provides CCU which is an imaging device, therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use a CCD since it is also an imaging device and since a CCD provides easier data readout. As to the photodiode array, it would have been obvious to one having ordinary skill in the art at the time of invention to use a photodiode array as the detection device as it provides means for analysis of optical signals from the sample.

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Claims 25, 31-39 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Lehman et al. (US 6,433,541 B1)* in view of *Ermakov et al. (US 6,448,795 B1)*.

As to **claim 25**, Lehman discloses a system for obtaining information in-situ regarding a film sample, comprising:

a sensor (500) having an eddy current inspection coil (202), and eddy current detector (250), first and second optical fibers (504). Lehman fails to specifically disclose the components of the optical measurement system, however the optical measurement systems are described as being a reflectometer or ellipsometer (col. 14, lines 25-35) the inclusion of a light source and detector are inherently met. Additionally, Lehman provides an inspection chamber housing (see fig. 9). Lehman differs from the claimed invention in that a radio frequency generator is not provided; however to do so is well known as taught by Ermakov. Ermakov discloses a three coil apparatus for inductive measurements of conductance that includes a RF generator (31 or 33) to produce eddy currents (col. 5, lines 1-5). It would have been obvious to one having ordinary skill in the art at the time of invention to include a radio frequency generator to generate eddy currents and to increase precision of detection.

As to **claims 26-27**, the system of Lehman and Ermakov discloses everything claimed, as applied above, in addition the thickness (col. 3, line 20) of a film on a wafer (602) is measured.

As to **claims 28-30**, the system of Lehman and Ermakov discloses everything claimed, as applied above, with the exception of the nature of the film layers, however it is well known that a semiconductor wafers include a dielectric and a conductive layer and the system of Lehman includes a eddy current inspection system to determine the thickness of thick layers and an optical inspection system to determine the thickness of thin layers. It would have been obvious

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to one having ordinary skill in the art at the time of invention that the wafer of Lehman includes a dielectric and a conductive layer.

As to **claims 31-32**, the system of Lehman and Ermakov discloses everything claimed, as applied above, in addition a modifying member, attached to first and second fibers, for focusing light from the source to the detector is provided (610).

As to **claims 33-34**, the system of Lehman and Ermakov discloses everything claimed, as applied above, in addition the first and second optical fibers are disposed parallel to and coaxially to the eddy current inspection coil in the sensor (col. 13, lines 10-15).

As to **claims 35-39**, the system of Lehman and Ermakov discloses everything claimed, as applied above, with the exception that the light source is not disclosed as being a laser producing light in the claimed wavelength ranges, however since the use of a laser would amount to a substitution of art recognized equivalents, it would have been obvious to one having ordinary skill in the art at the time of invention to include a laser. It would have been obvious to one having ordinary skill in the art at the time of invention to provided the particular wavelength ranges to allow for detection of multiple components of the sample under test. As to the CCD, it would have been obvious to one having ordinary skill in the art at the time of invention to use a CCD since a CCD provides easier data readout. As to the photodiode array, it would have been obvious to one having ordinary skill in the art at the time of invention to use a photodiode array as the detection device as it provides means for analysis of optical signals from the sample.

As to **claim 40**, the system of Lehman and Ermakov discloses everything claimed, as applied above, in addition the object is a wafer (205) and the inspection chamber includes a chamber for manufacturing process and positioning means and an airlock (see fig. 9).

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***Allowable Subject Matter***

Claims 41-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious a positioning arm on which a sensor is disposed (claim 41), in combination with the rest of the limitations of the claim.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

***Ichikawa (5,001,356); Toyota Central Res & Dev Lab Inc. (JP 1-136009 and JP 7-91948; Nippon Steel Corp (JP 3-295409).***

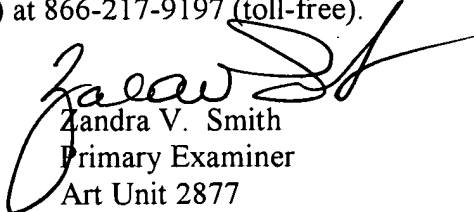
**Fax/Telephone Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (571) 272-2429. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Zandra V. Smith  
Primary Examiner  
Art Unit 2877

January 21, 2005